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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

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SUBJECT—

TITLE

FOREST INSECT SURVEY - SEASON OF 1945

SIERRA NATIONAL FOREST

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Forest Insect Laboratory
Berkeley 4, California
December 28, 1945

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FOREST INSECT SURVEY - SEASON OF 1945

SIERRA NATIONAL FOREST

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December 28, 1945

FOREST INSECT SURVEY - SEASON OF 1945

SIERRA NATIONAL FOREST

DEVELOPMENT OF INFESTATIONS IN 1944

Last year there were a few localized Ips and western pine beetle infestations on the Sierra National Forest which showed up during the late fall and winter and required a limited amount of control work to suppress them. This work was done in the Lewis Creek Basin, at Bass Lake, Saginaw Basin and Hogue Ranch. Between 400 and 600 infested trees were involved in all areas. The work was accomplished in part by CPS labor under the supervision of the Forest Service. The results as revealed by the survey this year were fully effective in reducing infestations from epidemic to endemic status in the Lewis Creek, Saginaw and Hogue Ranch areas. At Bass Lake the results were complicated by re-infestations originating from windfall breeding in the McLeod Flat blowdown area. Further discussion of this situation is included in this report of the 1945 survey.

FIELD EXAMINATION 1945

The survey this year was made by G. R. Struble and J. M. Miller of the Berkeley laboratory between September 22 and October 1.

Areas Examined.

Virgin and cutover pine type were both included in the examinations of the Chowchilla, Wawona, Willow Creek, Chiquito, Kaiser, Shaver and Kings River areas (see map).

Survey Methods.

Surveys were completed in 17 established roadside plots and one 320-acre regional survey plot. Additional information was secured by red-top counts made from lookout points.

Current insect trends and losses.

Over the Forest as a whole, bark beetle infestations in the pine stands this year remained in endemic status with upward trends showing in nearly all areas. Localized flare-ups in activity resulting from population increases built up in blowdowns occurred in the Bass Lake area. At Patterson Mountain many large groups of trees were killed within and adjacent to the 1943 Black Rock burn. Elsewhere on the Forest attacks were confined to single trees. Loss trends for the past two seasons in measured samples (roadside plots) representative of different areas are given in Table 1; estimates of the number of trees killed by units are given in Table 2.

Insects Involved in Current Kill.

The most important insects are the western pine beetle, Dendroctonus brevicomis Lec.; mountain pine beetle, D. monticolae Hopk.; pine engraver beetle, Ips confusus Lec.; and flatheaded borers Melanophila spp. Attacks of the western pine beetle were more aggressive this year than for the past several years. This was indicated from the character of trees attacked and the large number of attacks on the outer bark and egg galleries beneath the bark. Most of the ponderosa pines killed, particularly those in the Bass Lake and Black Rock areas, were thrifty trees with pointed crowns. Attacks by the mountain pine beetle were most aggressive in the Black Rock burn where large groups of mature, high quality trees were killed. In other parts of the Forest attacks by this insect were confined to single large-sized trees of excellent quality.

Ips confusus activity this year was decidedly lessened from that of a year ago. Top-killed trees, killed poles and killed reproduction which were common in some areas in 1944 had disappeared in 1945.

Relatively minor damage was done by flatheads. A few Jeffrey pines in the Chiquito area were killed by this insect.

AREAS REQUIRING SPECIAL ATTENTION

Aggressive bark beetle infestations in the Bass Lake unit (7)* and Patterson Mountain unit (22) will be discussed under "Control Recommendations."

Other areas which will require periodic watching to observe the course of beetle aggressiveness are discussed separately below. These areas are regarded as possible sources of trouble in the immediate future.

Chowchilla area.

The Jerseydale (1) and Footman Ridge (2) units of this area show about the same general trend as a year ago; mountain pine beetle activity diminished slightly, but the western pine beetle was somewhat more in evidence. A few widely scattered ponderosa pine groups faded during the summer of 1945. In addition there were occasional single faded trees of both species. The overall loss is estimated at 15 trees per section and 25 feet BM per acre.

The Lewis Creek Basin of the Miami unit (5) showed a strong downward trend in infestation over last year; a few ponderosa pines faded during the summer but no large groups were in evidence. This condition was expected because of the control work undertaken here last winter.

Willow Creek area.

Both the mountain pine beetle and western pine beetle were more active in the Soquel unit (6) than the previous year, although the situation is still endemic. One large group of 19 vigorous ponderosa pines was killed on

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*Numbers refer to unit numbers on the attached map.

private property owned by Dr. Wells. Elsewhere the killing in both ponderosa and sugar pines was confined to single trees. The upward trend in this unit is believed to have originated from the McLeod Flat blowdown in the adjoining Bass Lake unit (7). However, this trend is not likely to persist because of the better site quality and general high vigor of the stand in the Soquel unit.

CONTROL RECOMMENDATIONS FOR 1945-1946

Bass Lake unit (7).

A heavy blowdown at McLeod Flat, located approximately 1½ miles northeast of the north end of Bass Lake, occurred in January 1944. This provided an ideal breeding ground for D. brevicomis. Populations from this source were in sufficient abundance by the spring of this year to cause numerous groupings of killed ponderosa pines which faded during July and August 1945. Such groups, varying from 10 to 50 trees each, occurred within a radius of 3 to 6 miles from the blowdown area. Drainage basins most severely affected are North Fork of Willow Creek, Chilcoot Creek, Pines Creek, Sand Creek and South Fork of Willow Creek. Frequent groups occurred in timber adjacent to Bass Lake; they were in evidence particularly along the north end of the lake. Scattered groups occurred also along the north and east slopes of Goat Mountain. Somewhat in excess of 1,000 trees were killed. The areas most severely affected include approximately 8,000 acres.

Control work by the fell-peel-burn method is recommended in the Bass Lake unit. While it is quite probable that infestations will not continue at the higher elevations (4,000-5,000 feet) where considerable killing occurred during the summer (1945), the appearance of many fresh groups of trees between 3,000 and 3,500 feet in September indicated continued aggressive activity, particularly within the Bass Lake recreational zone. In the Chilcoot Creek basin and the upper part of Willow Creek drainage, the infestations may be expected to die out. The same condition is expected at these elevations along Graham Ridge, east of Bass Lake, and in Sand Creek and South Fork of Willow Creek drainages. Aggressive activity is expected in areas lying to the south of The Dome Observation Point; McLeod Flat and areas adjoining the lake shores for distances varying from one-half to one mile are included here. It is estimated that between 400 and 600 infested trees are present in this area of about 8,000 acres, most of which is within the Bass Lake recreational zone. This work should be started early in February and completed about the first of April 1946. The cost estimate is between $2,000 and $2,500.

Patterson Mountain unit (22).

A rapid upsurge in bark beetle activity was in evidence during 1945 in areas within and adjacent to the 1943 Black Rock burn. Aggressive killing of sugar pine and ponderosa pine in uninjured timber outside the burned area indicated the momentum of bark beetle populations which had built up in fire-injured trees and also the probability that the killing will spread further into high quality timber. It is estimated that between 2,000 and 3,000 trees were killed by summer (1945) generations within and adjacent

to the 1,800 acre burn. Many groups containing over 50 trees and many smaller groups are found within the burned area and outside.

Control of mountain pine beetle infestations is recommended in sugar pine areas lying between the Black Rock burn and the crest of Patterson Mountain. Between 4,000 and 5,000 acres are included in this area of high quality sugar pine in the mixed sugar pine-fir type. Aggressive killing of sugar pines along the edges of the burn and inward into sound timber indicates that the killing and spreading of infestations will continue for one or more years unless controlled. About 325 infested trees with a volume totalling 1,300,000 feet BM will require treatment. The cost is estimated at $8,000.

Control of aggressive D. brevicomis infestations in ponderosa pine in the Black Rock burn area is recommended. Past records on the course of western pine beetle epidemics following burns have shown rather sudden declines in infestation following a flare-up in activity. The same course may be followed by the Black Rock infestation, but heavy broods present within infested trees now in unburned timber indicate that more killing will take place next year unless these broods are destroyed. There are approximately 800 infested trees having a volume of about 750,000 feet BM in the area. The cost to treat them will amount to about $4,000.

Control work in this area should be started by March 15 and completed on or before the 15th of May.

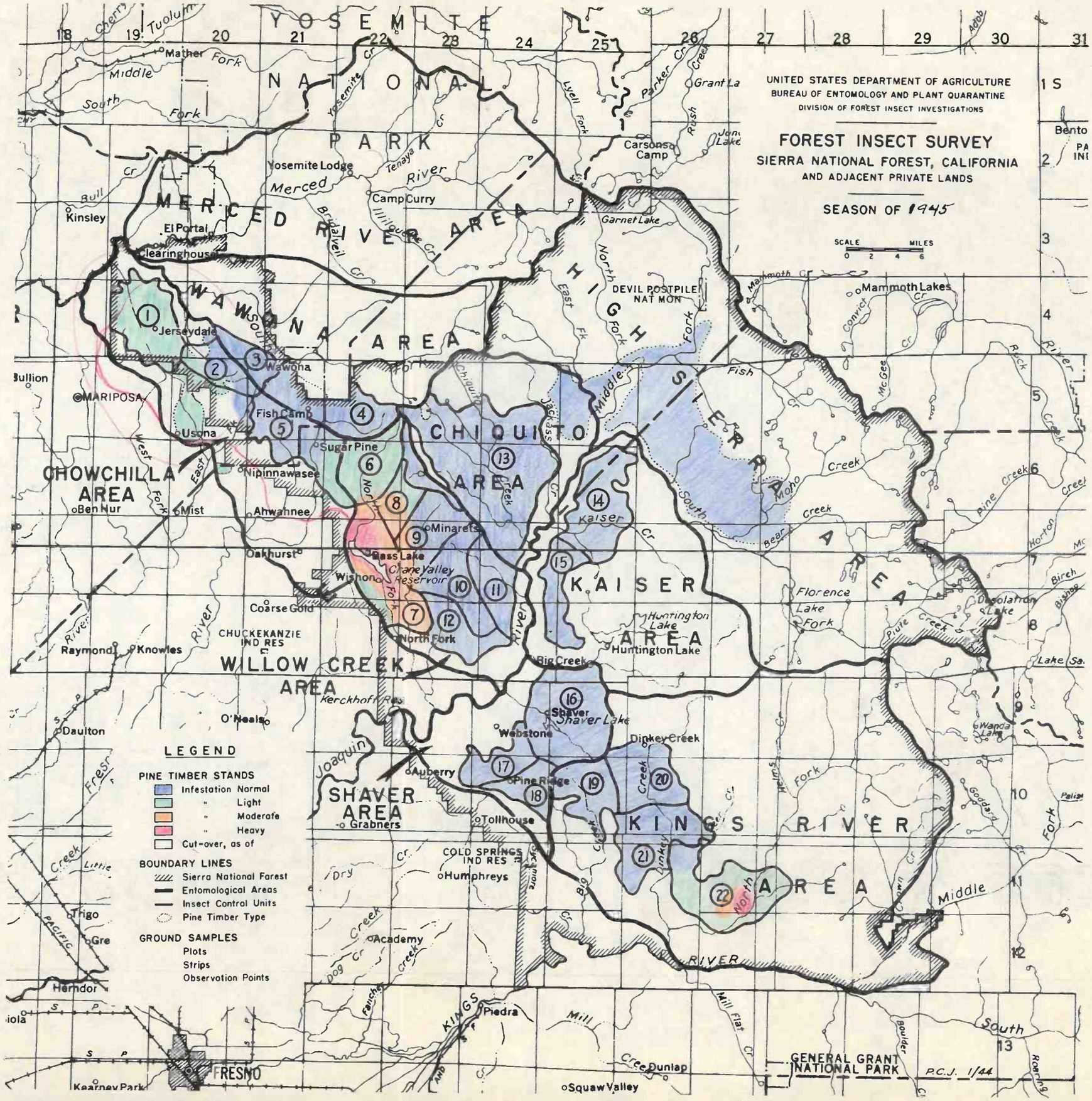
Table 1. Measured pine losses 1944-1945, Sierra National Forest

Area	Unit	Type of Sample	Acres	Number of Trees and Volume BM per Acre											
				Trees						Volume					
				1944			1945			1944			1945		
				PP	SP	JP	PP	SP	JP	PP	SP	JP	PP	SP	JP
VIRGIN PINE TYPE															
Willow Creek	7 McLeod Flat	RD-6 (Roadside Plot)	104	9			53	2		54	0		244	36	
	11 Fish Creek*	RD-16 (Road Count)	360	2			3	1		15	0		18	5	
Chiquito	13 Grizzley Meadow	RD-7 (Roadside Plot)	120	1			0	2	0	43	0	0	0	141	0
	13 Arnold Meadow	RD-8 (Roadside Plot)	176	1		2	1		1	3	0	21	8		15
	13 Jackass	RD-9 (Roadside Plot)	56	1			2		0	12	0	0	86		0
	13 Jackass	RS-9 (Regional Surv.)	320	1			5		0	2	0	0	47		0
	13 Summit Meadow	RD-10 (Roadside Plot)	232	7			3		0	20	0		30		0
Kaiser	15 Stump Springs*	RD-13 (Road Count)	300	7			3			37	0		9		
Shaver	16 Big Creek*	RD-12 (Road Count)	400	1	1		3	2		12	6		31	2	
Kings River	21 Fence Meadow	RD-14 (Roadside Plot)	520	5	8		2	2		11	59		4	16	
CUT-OVER PINE TYPE															
Chowchilla	2 Footman Ridge	RD-1 (Roadside Plot)	424	3	7		4	3		20	83		23	1	
Wawona	3 Signal Ridge	RD-2 (Roadside Plot)	504	2	10		0	2		7	60		0	15	
Willow Creek	6 Redwood Creek	RD-3 (Roadside Plot)	256		1			5		0	.2			35	
	6 Kelty Meadow	RD-4 (Roadside Plot)	200		1			2		0	1			20	
	6 Soquel	RD-5 (Roadside Plot)	120		1			1		0	9			14	
	12 Saginaw-Hogue Ranch*	RD-15 (Road Count)	384	4			3			10	0		17		
Shaver	18 Pine Ridge	RD-11 (Roadside Plot)	392		2			0		0	20			0	
		Total (ALL AREAS)	4868	44	31	2	82	22	1	246	238.2	21	517	285	15
		AVERAGE								15	14	4	30	17	3

*Road count volumes estimated.

Table 2. Estimated bark beetle losses during 1945 in commercial pine stands.

Unit No.	Name of Unit	Acreage	Trees
	Loss of 10 board feet or less per acre (Normal infestation)		
3	Signal Ridge	7,040	30
12	Cascadel	6,400	20
5	Miami (Hugh Ryan)	7,200	20
17	Jose Basin	12,800	30
18	Pine Ridge	11,520	25
4	Fish Camp	13,440	10
16	Shaver Lake	21,000	90
11	Rock Creek	10,500	90
19	Blue Canyon	14,000	130
14	Daulton	22,550	175
15	Canyon	3,800	40
	Loss of 11 to 20 feet BM per acre (Normal infestation)		
20	Dinkey Mountain	8,330	80
21	Oak Flat	10,240	120
	Loss of 21 to 30 feet BM per acre (Light infestation)		
6	Soquel	14,080	200
10	Whiskey Ridge	14,080	330
13	Chiquito	48,000	450
1	Jerseydale	7,600	100
2	Footman Ridge	3,800	60
5	Miami (Lewis Creek)	12,160	150
	Loss of 31 to 40 feet BM per acre (Moderate infestation)		
8	Chilcoot Creek	5,760	250
9	Sand Creek	16,000	300
	Loss of over 40 feet BM per acre (Heavy infestation)		
7	Bass Lake	17,920	1,000
22	Patterson Mountain	23,680	2,500
	Total (ALL UNITS)	297,810	6,200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DIVISION OF FOREST INSECT INVESTIGATIONS
FOREST INSECT SURVEY
SIERRA NATIONAL FOREST, CALIFORNIA
AND ADJACENT PRIVATE LANDS
SEASON OF 1945
SCALE MILES
0 2 4 6
YOSEMITE NATIONAL PARK
MERCED RIVER AREA
WAWONA AREA
CHOWCHILLA AREA
CHIQUITO AREA
KAISER AREA
WILLOW CREEK AREA
SHAVER AREA
HIGH SIERRA AREA
KINGS RIVER AREA
GENERAL GRANT NATIONAL PARK
LEGEND
PINE TIMBER STANDS
Infestation Normal
" Light
" Moderate
" Heavy
Cut-over, as of
BOUNDARY LINES
Sierra National Forest
Entomological Areas
Insect Control Units
Pine Timber Type
GROUND SAMPLES
Plots
Strips
Observation Points
Jerseydale
Wawona
Fish Camp
Usona
Sugar Pine
Nipinnawasee
Ahwahnee
Oakhurst
Bass Lake
Crane Valley Reservoir
Wishon
Coarse Gold
North Fork
Minarets
Mariposa
Ben Hur
Mist
Raymond
Knowles
Daulton
O'Neals
Auberry
Grabners
Tollhouse
Pine Ridge
Webstone
Shaver
Shaver Lake
Dinkey Creek
Huntington Lake
Big Creek
Florence Lake
Humphreys
Academy
Piedra
Squaw Valley
Dunlap
Kearney Park
FRESNO
Trigo
Herndor
Kerckhoff Res
Yosemite Lodge
Camp Curry
El Portal
Clearinghouse
Kinsley
Bullion
Carsonsa Camp
Garnet Lake
Mammoth Lakes
DEVIL POSTPILE NAT MON
Lake Sa
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